ENGINEERING NEWS-RECORD

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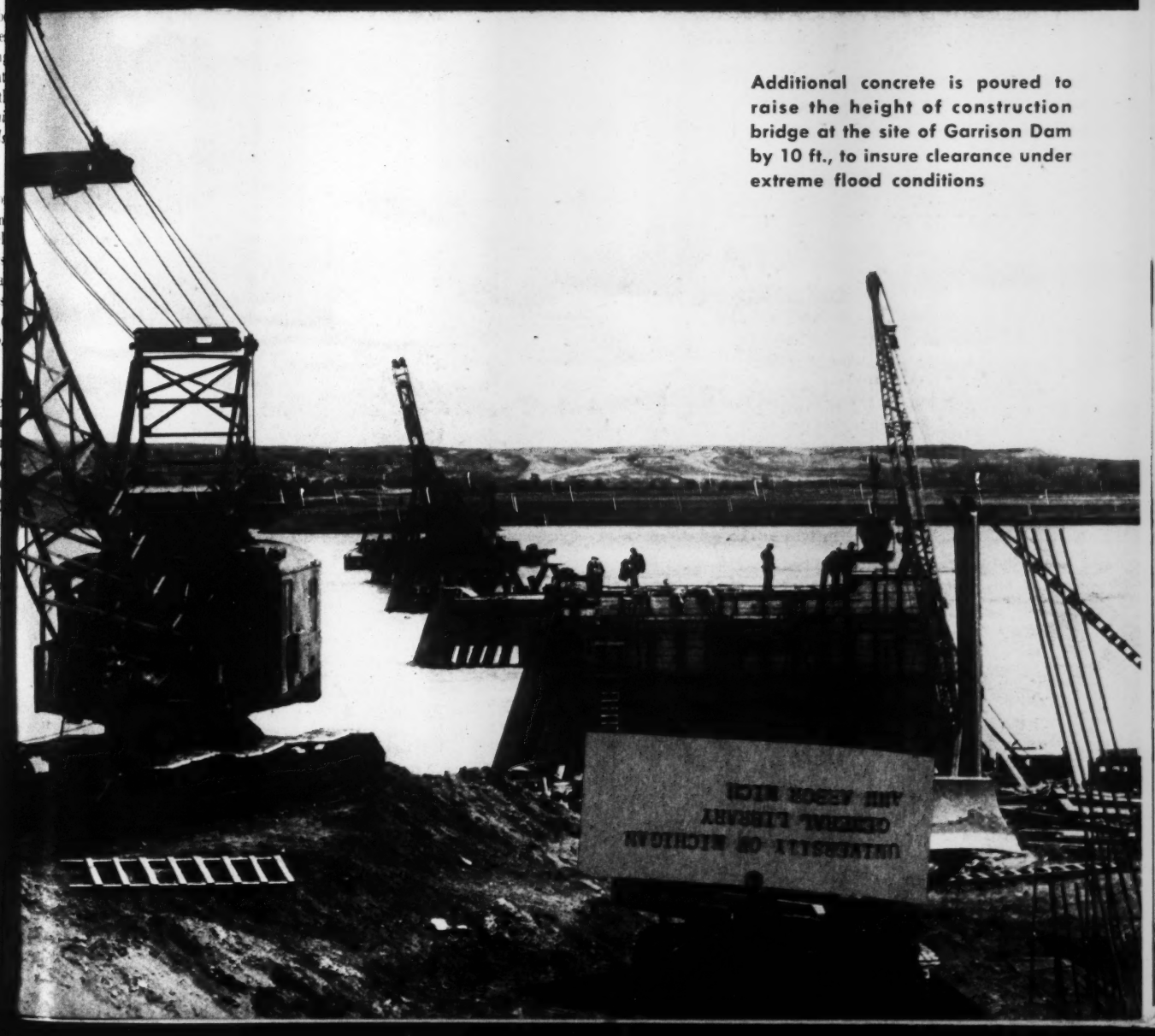
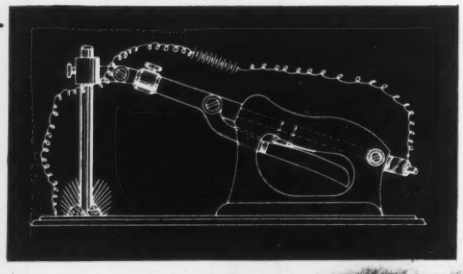


Additional concrete is poured to raise the height of construction bridge at the site of Garrison Dam by 10 ft., to insure clearance under extreme flood conditions

Slavianoff

Gave Contractors This Priceless Tool

His metallic-electrode welder revolutionized construction methods



"All-welded construction" is a popular specification today on all types of heavy construction.

Original Benardos carbon-electrode apparatus which was modified by Slavianoff to use metal electrodes.

Back in '92 Slavianoff adapted Benardos' carbon-electrode arc welder to use metal electrodes, for the purpose of filling blowholes in castings. This arc welder, in its modern advanced form, is today the most useful tool available for quiet, fast, economical, metal fabrication.

Throughout the world, contractors rely on arc welding to build lighter, stronger structures in less time. All-welded construction on highway bridges saves an amount of steel approximately equal in weight to the traffic load the completed bridge will carry! Tanks and buildings can be erected in the heart of a residential section quietly, without risking complaints and work stoppage . . . thanks to arc welding. On pipelines, arc welding speeds construction and strengthens the line . . . and, in addition, saves weight and simplifies the application of protective coatings by eliminating heavy flanges at joints.

If you are not utilizing arc-welded construction to its fullest extent, consult your nearest General Electric arc-welding distributor or General Electric Sales Office. They will help you solve your welding problems, and show you the complete G-E line of a-c and d-c welders. *Apparatus Dept., General Electric Co., Schenectady 5, New York.*

On pipelines, arc welding eliminates heavy flanges at joints, simplifies application of protective coatings to the line.

ELECTRIFIED CONSTRUCTION
BETTER PRODUCT ★ LOWER COST

GENERAL ELECTRIC

News of the Week

ENGINEERING NEWS-RECORD • JUNE 19, 1947 • VOLUME 138 • NUMBER 25

Senate committee restores some construction money

Increases appropriation for Reclamation Bureau $37 million—House opposes housing reorganization, criticizes handling of housing program

A $215,000,000 Department of Interior appropriation bill—containing an increase of nearly $37,000,000 over the House allotment for Bureau of Reclamation construction was approved last week by the Senate Appropriations Committee.

Housing plan disapproved

During the week in a series of other actions affecting construction House committees reported unfavorably on President Truman's reorganization plan to create an overall permanent housing agency; issued a report severely critical of the housing expediter's work and called for early elimination of that agency, and approved appropriation bills containing construction funds for still other agencies.

As reported out by the Senate group, the interior bill (H. R. 3123) contains nearly $105,000,000 for the Bureau of Reclamation, which compares with $68,000,000 approved by the House (*ENR* May and May 8, vol. p. 779), and raised the general investigations fund from $125,000 to $2,000,000.

Large construction appropriations approved include: Columbia Basin Development, $20,354,000; Colorado-Big Thompson Project, $10,471,908; Central Valley, $10,016288; Missouri River Basin, $18,535,000; Davis Dam, $13,500,000 in appropriations plus $4,500,000 of contractural authority; Anderson Ranch Dam, $3,874,000; Hungry Horse, $3,285,353; Klamath Project, $1,800,000; Deschutes Project, $1,626,000; Gila Project, $1,600,000; and All American Canal, $3,245,000.

The appropriation for the Bonneville Power Administration was increased to $16,222,400. This compares with a total of $6,907,800 approved by the House.

In contrast, the committee disapproved all construction requests of the Southwestern Power Administration. The House had approved $1,246,000, but the Senate group felt that this organization should not go ahead with any additional construction until a national public power policy is established.

Geological Survey appropriations include $3,000,000 for topographic surveys, which is the amount the House approved, and $2,625,000—a slight increase over what the House favored—for gaging of streams.

The committee followed the House in eliminating funds for construction of parkways by the National Park Service. However, the committee approved $2,150,000 for roads and trails—$500,000 less than the House voted for this work.

Construction funds allowed for the Bureau of Indian Affairs includes $3,000,000 for reservation roads and $1,822,000 for buildings and utilities.

Atomic construction to start

While the Senate committee was completing action on the Interior Department bill, the House Appropriations Committee was finishing its work on an Independent Offices Bill that will permit the Atomic Energy Commission to start a large construction program. The committee approved a $175,000,000 appropriation and $250,000,000 of contract authority for this new agency.

A great deal of this money will be for construction. AEC plans call for $215,000,000 of work for additional facilities for the manufacture of bombs and fissionable material, while around $20,000,000 may be spent for converting Oak Ridge, Tenn., to a permanent city. The new production facilities will probably be built at existing atomic plants—Richland, Wash., and Oak Ridge.

As reported some time ago, AEC also plans to build several completely new research laboratories, each to cost about $20,000,000. Projects already announced are the Brookhaven Laboratory on Long Island, the Argonne Project at Chicago, the Miamisburg Laboratory at Dayton, Ohio, and a west coast project, probably at Berkeley, Calif.

PRA Gets $264 million

A $264,000,000 fund for the Public Roads Administration consists of $247,711,146 for work under the 1944 Federal Aid Act; $10,288,854 for other work on the federal aid system; $3,000,000 for secondary feeder roads, and $3,000,000 for public-land highways.

Only $3,800,000 is provided for construction by the Public Buildings Administration of the Federal Works Agency, for work in the Washington, D. C. area. Building money for the Bureau of Community Facilities is also

(*Continued on page* 3)

Senate extends time for highway aid

The Senate, June 16, passed the bill (H. R. 1874) extending the time during which funds provided in the Federal Highway Act of 1944 would be available to state highway departments. This followed similar action by the House late in May—thus the measure will soon go to the President for his signature.

The bill amends the law so that the $500,000,000 of federal aid provided for each of the three first postwar years would continue to be available for two years after each specific year for which the appropriation is given.

St. Lawrence project cost raised to $675 million

Estimated cost to the U. S. for constructing the St. Lawrence Seaway and Power Project has been increased to $491,609,000, while Canada's share is now estimated at $183,098,000, Lt. Gen. R. A. Wheeler, Chief of Engineers, told the Senate Foreign Relations Committee last week. This revised estimate makes the total expected cost of the job $674,707,000, including expenditures already made by Canada on the Welland Canal. It compares with $619,500,000 listed last year, when the army engineers revised upward the expected cost to the U. S.

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Public Construction — Oklahoma A & M College, at *Stillwater,* will issue $9,150,000 revenue bonds to finance a large building program . . . Hospital expansion to cost $6,280,000 is being considered at *Rochester, N. Y.*—for Genesee, Highland, St. Mary's and Park Ave. hospitals and a new general hospital . . . The Mississippi Building Commission has instructed architects to prepare sketches for the proposed $3,000,000 state office building at *Jackson* . . . *Minnesota's* legislative advisory committee has approved allocations of $1,569,410 for development of airports throughout the state . . . The Canadian government will spend $3,000,000 to enlarge the airport at *Moncton,* N. B.

Industrial Construction—A $3,500,000 catalytic cracking unit is planned for the *West Tulsa, Okla.,* refinery of the Mid-Continent Petroleum Corp. . . . CPA has approved construction of a $1,500,000 factory building for the M and R. Dietetic Laboratories, Inc., at *Sturgis, Mich.* . . .The Jewish General Hospital at *Montreal, Que.,* will undertake a large scale plan of extensions soon, first work to cost about $1,000,000. . . . A contract has been awarded by the Western Gypsum Co. to the Jacobsen Construction Co. to build a plant at *Sigurd, Utah,* to cost more than $1,000,000 . . . The Empire District Electric Co. will build a $4,000,000 addition to its steam power plant at *Riverton, Kan.* . . .A new $1,000,000 Delaware Park Shopping Center will be erected on Delaware Ave. in *Buffalo, N. Y.* . . . A dust-elimination project to cost $4,250,000 has been announced for the Niagara Falls plant of the Electro Metallurgical Co. Work has already begun and some of it is scheduled for completion at the end of this year, and the entire operation by May, 1949 . . . Plans by the United Fuel Gas Co. of *West Virginia* to spend nearly $10,000,000 in construction and improvements are revealed in applications to the West Virginia Public Service Commission. One application was for authority to build 49 miles of 16-in. dia. pipe line and 80 miles of 20-in. line, at a cost of more than $4,300,000.

Housing—An apartment development for 500 families in *Tonawanda, N. Y.,* to cost between $4,000,000 and $5,000,000, will be carried out by Ernest H. Fahmer and Associates . . .Griffith, Walker & Lee, contractors, have announced the start of 583 single residences to be built on a 116-acre tract in the Lakewood district of *Los Angeles, Calif.* The project when completed will have cost about $6,000,000. Street work and grading have been begun . . .Construction of a 172-family apartment project at *Dallas, Tex.,* is scheduled to get under way in two weeks . . . Plans are being made by the Walnut Hills Development Co. for the erection in *Charlotte, N. C.,* of 212 apartment units at an estimated cost of $1,500,000.

THE COVER PICTURE

To provide adequate clearance under extreme flood conditions, the construction bridge at the site of Garrison Dam in North Dakota is being raised by 10 ft. over original design grade by increasing the height of concrete pier caps on pile foundations.

The original design (*ENR* July 25, vol. p.109) had assumed the June rise to be the most severe condition but extreme high water caused by the spring break-up this year caused a revision in the design.

Early this month the joint contractors (Mississippi Valley Constructors, Inc., Leavenworth, Kan., and Winston Bros. Co., Minneapolis, Minn.), had practically completed driving of 24-in. pipe piles averaging about 100 ft. long for seven river piers, and it was expected that the foundation for the eighth pier would be completed before the end of the month.

Both abutments for the bridge rest on steel H-piles. The west abutment, previously constructed, has been raised by adding concrete after driving of several more piles to increase bearing under the augmented structure. At the east abutment, H-piles will be lengthened by welding 10 ft. additional to each pile. Practical difficulties prevented similar action in increasing the length of pipe piles driven this season for the river piles.

Howard, Needles, Tammen and Bergendoff, Kansas City, Mo., designed the 9-span, 1,350-ft. bridge for the Garrison District of the Missouri River Division.

Cascade toll tunnel interests investors

Eastern investors who finance the Pennsylvania Turnpike and a toll highway in New England are "interested" in a toll tunnel through the Cascade Mountains east of Seattle, and are willing to accept engineering recommendations if a traffic survey shows that the project is financially sound, Gov. Mon C. Wallgren declared recently.

The state highway department is now negotiating for such a survey.

A proposed bond issue would include engineering costs. Governor Wallgren said a preliminary check into legal phases of financing the entire project with revenue bonds, and without any legislative appropriation, indicated it is legal to include preliminary engineering costs in the bond issue as well as the actual tunnel project. An appropriation of $750,000 to pay these engineering costs died in committee during the recent state legislature session.

The tunnel has been recommended by Ole Singstad, New York consulting engineer retained by the state to study the project. Singstad estimated that the $22,000,000 project could be liquidated in 35 years by charging a toll of 50 cents a car.

As recommended by Singstad, the tunnel would be a 2-mile bore near Snoqualmie Pass, connecting with the present East-West highway.

Law would end diversion of Connecticut road funds

A proposed amendment to the Connecticut state constitution to prevent diversion of highway funds has been approved by the Constitutional Amendments Committee. If approved by the House at this session, the resolution must again come before both branches of the legislature in 1949, and then be submitted to a referendum vote.

The amendment would provide: "No moneys derived from fees, excises or license taxes relating to registration, operation or use of motor vehicles on public highways or to fuels used. . . . shall be expended for other than cost of administration, statutory refunds and adjustments, payment of highway obligations, costs of construction, reconstruction, maintenance and repair of public highways and bridges and expenses of the state traffic laws."

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Group restores some construction cuts

(*Continued from first page*)

small, consisting of only $1,707,687 for work in the Virgin Islands.

Contract authority for hospital construction by the Veterans Administration was increased from $257,950,000 to $338,250,000. This will permit the 76 previously authorized projects, calling for 40,000 beds (*ENR* April 11, 1946, vol. p. 511) to go ahead, as well as 15 new hospitals to be started. The new work planned includes hospitals at Los Angeles, San Diego, San Francisco, Denver, Chicago, Topeka, Boston, Ann Arbor, New York City (Borough of Queens), at a North Carolina site yet to be named, Oklahoma City, Memphis, Marlin, Tex., and two projects in the Cleveland area.

The National Advisory Committee for Aeronautics was granted $2,400,000 in cash and $2,143,000 of contract authority for improvement of existing facilities at three laboratories.

Permanent housing agency fails

President Truman's Reorganization Plan No. 3 which calls for a permanent housing agency—was reported on unfavorably by the House Executive Expenditures Committee, and early action by the House as a whole is expected. The Senate will start hearings on the proposal this week. Unless the plan is voted on unfavorably within 60 days after Congress received it, the plan automatically becomes effective.

Early in the week the House Committee on Appropriations reported out the bill (H.R. 3756) providing funds for the National Housing Agency, the Housing Expediter's office, the TVA and other corporations. The measure was accompanied by a report severely criticising the way the federal housing program had been handled and calling for the elimination of the expediter's office by June 30. The committee also favored the plan now before Congress to transfer to the Federal Works Agency the job of disposing of war housing. A few days later, the House as a whole followed the committee's recommendation in passing the bill with only minor changes.

However, work of a Senate-House conference group attempting to decide what to do with rent controls and federal regulations on construction indicates that the expediter's office may continue to exist somewhat longer than the June 30 date. The chances that controls on non-housing construction will continue in force a few more weeks also appear good, although the restrictions on homebuilding may virtually disappear.

The corporation bill, as passed by the house, contains about $50,000,000 for construction by the TVA, including work to be financed with corporate funds, or about $5,000,000 less than requested. Much of this money will be spent to continue construction of Wautaga and South Holston dams. The bill contains language requiring the TVA to repay to the U. S. Treasury the large past appropriations for constructing power-producing facilities. These appropriations, which totalled over $348,000,000 as of June 30, 1946, are to be amortized in 40 years.

The office of Inter-American affairs, which is now a part of the State Department and which has underway a large construction program in Latin America, was recommended to receive $7,000,000. This amount is double the appropriation for the present fiscal year, which ends June 30.

Before passing an emergency deficiency bill, the House added $15,000,000 for flood work in the midwest areas so hard hit by recent floods (*ENR* June 12, vol. p. 921). The money will be spent by the Army engineers to repair levees and other flood protection works.

Delaware bridge borings to start soon

A low bid of $33,020 was made by Warren George of New York, for making test borings for the new Delaware River bridge near Wilmington, Del.

The specifications provide for the making of approximately 36 borings on dry land on each side of the river and beneath the surface of the river at points where main piers of the bridge are to be based.

Borings are to be from 150 to at least 250 ft. deep and samples will be taken at all depths.

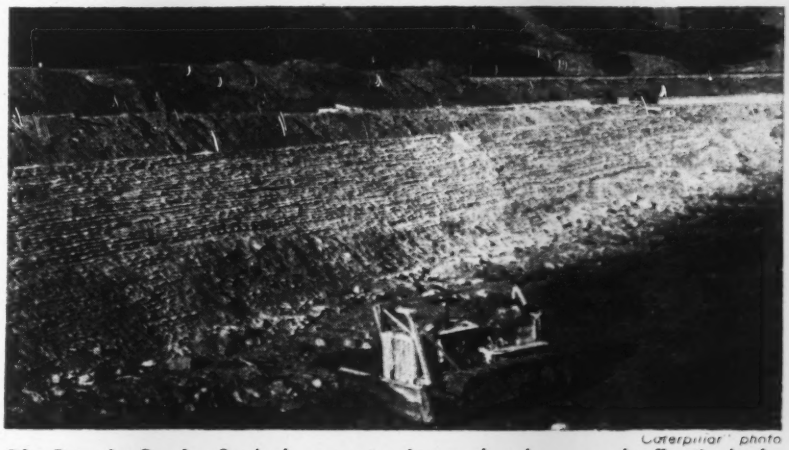
It is expected that a contract will be awarded within two weeks.

Prefabs to resist —60° at Arctic weather stations

Six special Arctic weather station buildings are being prefabricated for the Canadian government by Timber Structures, Inc., Portland, Ore., to resist temperatures of 60 degrees below zero and wind velocity of 70 miles an hour. The buildings are made of glued plywood and studding-stressed skin panels with full spun glass insulation. Roofs are designed to support 40 lbs. to the sq. ft.

Floors, walls and roofs are made in panels 4 in. in overall thickness. Sheets of ¼-in. and ⅜-in. plywood are glued to spacers and solid-filled with rockwool for insulation. The panels, each 4x8 ft. in. size, are joined with a "splined" joint which is airproof and waterproof. Exterior doors open inward to permit egress even in cases of roof-high snow.

The stations, to be operated by the Canadian meteorological service, will provide a chain of weather observations points in northern Canada and Greenland. It is understood that at least one of the stations will be within 600 miles of the North Pole.



Caterpillar photo

***Rip-Rap in Sack**—Sacked concrete rip-rap has been used effectively for bank protection in the Niles Canyon, Calif., area, where a new two-lane blacktop highway is being built in the bed of an old river channel. Cement and aggregates for the rip-rap were mixed and placed dry in the sacks, which were later wet down to form concrete. The new road will eliminate several dangerous curves and a narrow bridge.*

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Perry A. Fellows named planning director for Ethiopia—Cleveland, Ohio, firm gets big oil machinery order from Russia

Ethiopia—Perry A. Fellows formerly a member of the general review board of the War Assets Administration, who has had wide engineering and administrative experience, has been employed by Emperor Haile Selassie as director of planning and as economic and industrial adviser. His new job will start July 1.

Mr. Fellows is well acquainted with the task he faces in improving the economy of this African country. In 1944-45 he headed the U. S. Technical Project in Ethiopia under the auspices of the U. S. Board of Economic Warfare, later the Foreign Economic Administration.

A civil engineering graduate of the University of Michigan, he worked as a civil engineer with several railroads, and served as city engineer of Detroit, Mich., from 1925 to 1931, and as engineer-manager of the Detroit city airport from 1931 to 1933. His federal government experience started in 1933 when he joined the staff of the chief engineer of the Civil Works Administration. He later became chief engineer and assistant administrator of the Works Projects Administration.

In an interview before leaving for his new post, Mr. Fellows said that Ethiopia will need considerable outside technical assistance, plus financial aid, but that much can be done within the country to produce a higher standard of living. An American mission has already made a comprehensive survey of the highway and transportation needs of the country, its mineral, forest and agricultural resources, industries, public health and education. Detailed surveys have been made of the water supply needs of Addis Ababa, Dessie, Dire Daua, Harar and Jimma. Improvements were actually started in some cases before the mission was completed.

Ecuador—Luis A. Eguez Marino, chief engineer of the construction department of the Caja de Pensiones de Ecuador, a social welfare agency for employees of the government and banking houses of Ecuador, is visiting the United States at the invitation of the Department of State. He will observe government and other housing projects in this country. He is also interested in new systems of construction and in urban planning for small cities.

Colombia—Mayor Fernando Mazuera Villegas of Bogata has asked Park Commissioner Robert Moses of New York City to make a study and present his recommendations for modernizing Bogata.

India—After completing a course of lectures in the Washington, D. C., offices of the Public Roads Administration, 21 highway engineers from India who went to the United States in April to study American road-building methods will spend the summer inspecting work on highway projects in various states. They will return to Washington in August for final discussions with Public Roads officials.

All engineers in the deputation hold positions in the national, provincial or municipal governments in India, and will participate in the development of India's highway program. Their visit to the United States was sponsored by the Education Department of the Indian Embassy in Washington and by the American Road Builders Association.

Machinery . . . .

Russia—J. B. O'Connor, executive vice-president of Dresser Industries, Inc., of Cleveland, Ohio, has just returned home after an 8 weeks' trip to Russia during which he obtained from the Russian government orders for 8 deep-drilling rigs, 26 portable drilling rigs, 10 portable clean-out rigs, more than 100 pumping units, a liquid methane plant, and various other items of oil field equipment. The orders aggregated more than $7,000,000.

The equipment will be used by the Soviets in their current 5-year plan for the rehabilitation and development of petroleum and gas fields. The deep-drilling rigs are capable of drilling to 15,000 ft. and are equipped with automatic controls that reduce manual labor to a minimum. Bits to be used on the rigs are of the same type that were designed for deep drilling in the Rocky Mountains. These rigs are to be used in the fields between the Volga and the Urals, in the Kuibyshev District.

Construction . . . .

Puerto Rico—The Professional Building (Clinica Pereira Leal) a 12-story reinforced concrete structure (exclusive of basement and penthouse) is now under construction in San Juan. The design calls for two large stores on the ground floor, with the next five floors devoted to medical offices and hospital adjunct services such as X-ray, laboratories, etc. The top six floors will be a private general hospital of 300-bed capacity. Estimated cost of building is around $1,200,000.

The building consists of two parallel wings both 45 ft. wide, one 127 ft. long and the other 68 ft. long.

***Britain Builds Houses**—Rushing to provide additional housing for its citizens, the British government has placed orders for some 20,000 "prefabricated" concrete houses of the "Airey" type shown above. Government reports show that factories are now producing enough components for 25 such houses weekly, but this figure is expected to be raised shortly.*

Contractor is H. I. Hettinger and Co. and the architect and inspector on the job is the firm of De Castro and Hardesty, Inc., all of San Juan.

Mexico—Construction of moving-picture theaters, a prominent feature of Mexico's building construction boom since its inception in 1935, has been virtually suspended, as large-scale builders curtail their activities. A current severe drop in business activity, which builders say amounts to 40 percent over last spring, was cited as the reason for the hold-up in plans.

Transport . . . .

Argentina—A total of 260 new 20 and 30-ton capacity box cars, flat cars and gondolas is now being shipped to Argentine railroads by the R. C. Stanhope Co., of New York City, to aid in cutting down shortage of cars.

Albania—Construction of Albania's first railroad line was started recently at ceremonies held at Tirana—the capital. The railroad will connect the port of Durazzo with Elbasan, about 40 mi. inland, passing through Tirana.

Russia—Construction of the first line of the Leningrad subway—a seven-mile section—started recently, to connect industrial areas of the city with its center and with three principal railway stations. The subway, which will eventually circle the city, will reach a total length of about 25 miles.

Miscellany . . . .

Mexico—The development of the Papaloapan region of Vera Cruz State, on Mexico's Caribbean coastline will stress sanitation features, along with development of some hydro-electric power and irrigation storage, Adolfo Orive Alba, secretary of Hydraulic Resources, said recently. Mr. Orive Alba recently returned to Mexico after an inspection of the works of the Tennessee Valley Authority.

He pointed out that malaria now affects about 30 percent of the population of the Papaloapan region, and its prevention—as well as prevention of other water-borne diseases—will be the most important result of the project. Swampy areas will be drained, and sewage disposal plants and other sanitary works will be built.

Venezuela—The Iron Mines Company of Venezuela recently approved a contract with the Frederick Snare Corp. for design and construction of an ore transfer station at Caranero Bay. Total cost is estimated at $6,000,000.

EUROPEAN NOTEBOOK . . . .

Austria Gambles on the Future

by WALDO G. BOWMAN

Vienna, Austria—Regarded as a liberated and not an enemy country, Austria is divided up among the four powers—the U. S., Russia, Great Britain and France—just like Germany; and Vienna, like Berlin, is divided into four sectors.

What Austria has that Germany has not is an established central government. Her people seem happier and work more normally, and with somewhat greater hope for the future. Perhaps this is because the animosity that is present in Germany between the former Nazis and the more democratic elements is lacking in Austria. Perhaps, also, the Austrians are better gamblers.

Any comparison that shows the Austrians to be better off than the Germans is pretty meaningless. They lack food and coal, which even before the war had to be imported in large quantities. Their building materials are inadequate, their transport overcrowded. Never an industrial nation, much of the industry that Austria had is unavailable.

There is no doubt in the Austrian mind where the blame for her woes rests. Russia, by dragging her feet on peace treaty negotiations, makes it impossible for the occupying armies to move out, and by carting away or confiscating *in situ* most of the industry in her zone, including vital oil, deprives the Austrians not only of manufactured products but of taxes. Russia is not popular among the Austrians.

In contrast, the United States is highly regarded. Our mission is to get the country back on her feet economically and to assure her independence politically. The Austrians know this and appreciate it, however, much they may wish that we could go home.

Aid in reconstruction given by our Army Engineers and our Military Government transportation and power officials is one of the basic reasons for our popularity in Austria. Col. H. S. Miller, chief engineer of USFA (U. S. Forces in Austria) has area engineers in the principal cities—Vienna, Linz and Salzburg. Each of these men has a service battalion of about 200 men and employs several times that many on contract. Most of their work has been for the benefit of our occupation forces, but much of it has also helped the Austrian economy.

We have aided in the re-establishment of bombed rail yards, on highway reconstruction, and in the clearing up of rubble, principally in Vienna. We have found and repaired city fire apparatus that the Russians drove off. And we have loaned motor vehicles to Austrian city departments on countless occasions.

Col. Miller landed on Omaha Beach as engineer of the 19th Corps., and as engineer of the 16th Corps crossed the Rhine at Wesel (D-Day

(*Continued on following page*)

Wide World Photo

***No Lack of Material**—Austrian reconstruction workers have no trouble finding material for their work. Piles of rubble like this one in Vienna are always available.*

(*Continued from page* 5)
on the Rhine, *ENR*, May 3, 1945) has been USFA engineer from the beginning. He is now able to look back upon the virtual completion of the first two phases of the engineer mission in Austria—provision of troop housing and the supplying of quarters for the families of Americans, including such auxiliary structures as laundries, post exchanges and recreation buildings and facilities. The third, last and current phase includes maintenance of utilities on American installations and assistance to the Austrians in improving transport and utilities in Vienna, and in increasing production nationally—principally in lumber and cement.

Unfortunately for Vienna, all of the Danube River and the parallel canal in the city are in the Russian zone. When it comes to aiding in the reconstruction of occupied countries the Russians look the other way.

Of the dozen short bridges over the canal, only two are in service. One is a timber trestle, the other a rolled steel girder crossing of three 50-ft. spans. Over the Danube itself, one of the two railroad bridges is usable by virtue of a timber trestle across a blasted opening in the 10-span structure, and the Reichsbrucke highway crossing was miraculously undamaged. Three other highway bridges are wrecked, and have not been touched by reconstruction forces.

The Reichsbrucke is a modern, plate-chain suspension bridge with a main span of 800 ft. It has plate girder stiffening members some 16 ft. deep located beneath the roadway, and a strange phenomenon is the presence of two extra supporting piers in the river at the third points of the main span.

Indicative of the so-called iron curtain is the fact that no one in the American sector seemed to know why these piers were there. An examination of the bridge (hurriedly made because snoopers are not welcome) revealed only slight shell fire damage to the lower flange of one of the side span girders, not of a character to warrant any such repair methods. The piers also look considerably older than two years, suggesting that some error in the original design or construction may have required their addition.

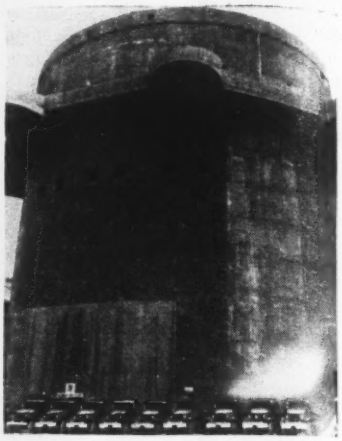
Vienna was badly damaged along the canal and the river, the area in which the Germans made their last stand against the Russians. The most regrettable damage however, came from an unintended U. S. bomb hit on the famous State Opera House in the center of the city. Extensive reconstruction has been begun, which is progressing slowly because of material shortages and lack of money. The opera is operating in another building meanwhile, and each ticket sold carries a tax whose proceeds are being applied to the rebuilding work.

How great an advance in reconstruction the Austrians have made in the U. S. zone (and it is substantially greater than in the other zones) is evident from the fact that 9 railroad yards were completely destroyed and all have been put back in service; 26 railroad bridges were wrecked and all have been rebuilt including the permanent rebuilding of a half-mile long structure across the Inn River at Branau, Hitler's birthplace; and, by May the railroad plant had been restored to the point where it could handle all traffic in sight. Presently, locomotive and repair shops are being rebuilt so that the great dearth of rolling stock can be eliminated. All highway bridges have been repaired and road surfaces have been made passable, but shortages of tar, cement and marking paint result in a makeshift type of reconstruction.

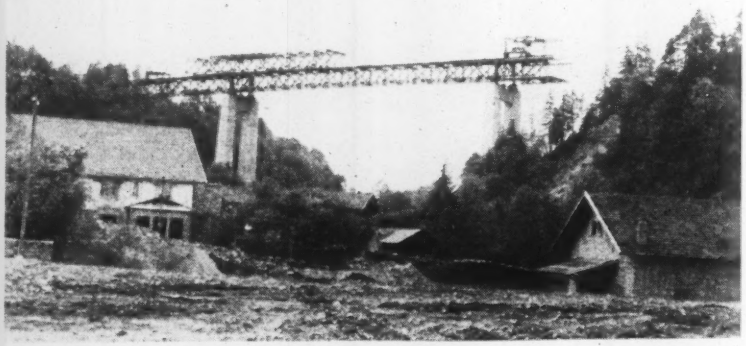
Were the Danube in U. S. hands its vital water traffic would be moving at substantial volume; it is so moving in the U. S. zone upstream in Austria and Germany. As it is, the Russians refuse to internationalize the stream, and we thus refuse to give them the barges that we captured. It makes for a controversial situation.

Our principal Danube job at present is the repair of bank revetments at Linz, badly damaged by bombs aimed at the Hermann Goering Steel Works; even during the low water the Danube flows at about 8 knots at this point. Restoration of the Danube to its former status as an international river and waterway is our number one policy in southeastern Europe since it is the key to economic recovery in this area.

A significant step has been taken in the U. S. zone in planning extension of railroad electrification so that in twelve years all Austrian rail mileage can be electrified and necessary coal imports for railroad operation eliminated. The State Railroad System is the largest single enterprise in Austria and employs 90,000 persons. Putting it on an efficient basis would have wide benefits.



***Shelter**—One of the structures the Nazis built to protect Vienna was this concrete air-raid shelter, 200 ft. in diameter and 200 ft. high, with walls 8 ft. thick. Anti-aircraft guns were mounted on top. About 2,000 persons could be sheltered in the structure.*



***Viaduct Repair**—Mangfall Viaduct, destroyed by retreating German armies, is taking shape again under supervision of Army Engineers. Span is 230 ft., and height above the small stream is about 200 ft.*

"Sewage treatment plants" on trains will be given trial by railroads

Research conducted by The Johns Hopkins University for Association of American Railroads has reached pilot-plant test stage

A device for the treatment of excreta on train toilets to render it innocuous prior to disposal will receive its initial trial within the next month. This was revealed by Abel Wolman, professor of sanitary engineering at The Johns Hopkins University in a talk before the Washington (D. C.) Sanitation Conference in which he outlined the sanitation research program that he is directing for the Association of American Railroads.

In effect a miniature mobile sewage treatment plant, the device was described by Dr. Wolman as a macerator to "colloidize" solids into liquid form, coupled with a heat-type disinfector. After treatment the material is to be discharged along the tracks only when the train is traveling at high speeds to assure effective dispersion.

No details were given concerning the new device except to say that the initial installation would include a mechanical macerator and an electric heater to perform disinfection in the short space of 45 to 60 seconds. Some thought also is being given to the possible use of supersonic sound waves for bacterial destruction.

Much work remains to be done, warns Dr. Wolman, before this or similar devices can be applied on all types of railroad passenger cars. "Differences in car design and construction are so great" he said "that standardization is impossible at present. Furthermore, special problems are introduced in adapting the device to compartment-type cars containing a number of toilets; quite possibly such cars will require the development of a vacuum piping system leading to a single treatment or capture unit."

The "capture unit" continued Dr. Wolman, might be a non-metallic tank that could be easily removed from the outside of a car when it is full and disposed of by burning. Such an installation might find application on cars where the passenger traffic is relatively light.

Railroad sanitation problems

Tracing the history of railroad sanitation, Dr. Wolman said that more than half a century ago some public health workers predicted that lack of proper facilities for excreta disposal would result in having the nation criss-crossed with ribbons of infection. Epedemiological evidence, however, had failed to reveal any record of disease outbreaks traceable to disposal of excreta on the tracks.

All public health people have condemned the practice from an esthetic point of view, both in regard to trackage and terminal nuisances, and one eminent doctor deplored the condition whereby the railroad sought to regulate the physiological habits of passengers in transit through their continuance of medieval methods of disposal.

It was not until 1946, however, that a research program was sponsored by the Association of American Railroads and work was undertaken on a cooperative basis with The John Hopkins University. Significant findings to date are:

1. Hazards of disease spread as a result of present practice are of minor consequence; elimination of nuisance and inconvenience are of major concern.

2. A vast number of patents have been issued for all types of devices to provide better disposal facilities, yet strangely enough none of these have been put to use.

3. Basic data on the volume and frequency of use of train toilet facilities were non-existent. Surveys now being made on trains of every description reveal, among other things, that quantities of excreta are not nearly as great as was anticipated. Example: flushing water used is 3¾ gal. per hundred passengers per hour; dry solid discharges average only 0.00235 lb. per mile of track (0.121 lb. on a wet solids basis).

Headquarters for the research project, on which Lloyd Clark is project manager, is the Mont Clare shops of the Baltimore and Ohio Railroad in Baltimore. In addition to Mr. Clark, who was formerly state sanitary engineer of South Dakota, the staff includes six engineers, two bacteriological chemists.

Ban escalator clauses in St. Louis contracts

St. Louis, Mo., will no longer accept bids containing escalator clauses, it was announced recently when the Board of Standardization rejected bids totaling about $72,000 for new equipment for the St. Louis Fire Department because the proposals contained provisions of this nature.

Milton M. Kinsey president, Board of Public Service, said that it has been the experience of the city that construction costs increased when it accepted bids containing such clauses.

U. S. Grant III named university vice-president

Maj. Gen. U. S. Grant 3d. (Ret.) grandson of the Civil War general and President, has been named vice president of George Washington University, Washington, D. C. He is the first vice president the institution has ever had in its 126-year history.

U. S. Grant III

Announcement of the appointment came from Cloyd Heck Marvin, University president, who said the appointment was to be effective immediately.

General Grant's new job will not interfere with his chairmanship of the National Capital Park and Planning Commission, a post he has held since September, 1942. Dr. Marvin said that special arrangements have been made with President Truman to permit the retired Army officer to continue in that position.

General Grant has been a trustee of the university for 16 years.

Budget $125 million for California buildings

A $128,000,000 appropriation for construction of state buildings, mental hospitals and prisons is contained in the California state budget signed May 31 by Gov. Earl Warren after approval by the legislature.

The money augments a $154,000,000 fund voted last year and is intended mostly to provide for increased construction costs, although a few new projects have been added. Less than $5,000,000 of the total sum has been spent so far.

The new appropriations is to be divided as follows: University of California, $33,107,000; mental hospitals, $31,700,000; state colleges and state schools, $16,417,000; state prisons, $10,422,250; camps and schools for delinquent youths, $3,650,000; additions to the state home for veterans at Yountville, Calif., $2,060,000; an addition to the state capitol and other construction in Sacramento, $7,900,000; state national guard armories, $5,000,000; miscellaneous construction by the state division of forestry, $1,650,000; branch offices for the state department of motor vehicles, $1,703,750.

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

Los Angeles approves $17 million sewer, incinerator program—Cities tackle parking problems—Reinstate St. Louis traffic engineer—Smoke abatement rules put into effect at Salt Lake City

Los Angeles, Calif., voters last week had approved a $50,000,000 bond program to finance municipal projects that will include some $17,000,000 for sewer improvements and construction of incinerators.

The program will cover construction of additional interceptor and relief lines to relieve a situation which has forced home owners in many new subdivisions built up over the past 15 years to use cesspools. Additionally, city officials said, industrial plants have overtaxed some existing sewers that were built originally to serve residential areas. New incinerators are to be of the rotary-type similar in design to one soon to be put into operation (*ENR* Dec. 12, 1946, vol. p. 793).

While Los Angeles thus moved to clear potential health menaces, other cities also announced plans for new sewer work. Among these were:

Omaha, Neb., where the sanitation commission was considering a bid submitted for construction of the proposed South Omaha Sewer. Only one bid—for $1,676,677—was submitted for the work; Elmira, N. Y., which received a $34,000 Federal Works Agency grant to finance drawing of plans and specifications for a proposed $862,000 sewer system; Indianapolis, Ind., where city councilmen authorized a special loan of $60,000 to provide funds for preparation of working plans for its $35,000,000 improvement project, and Buffalo, N. Y., where officials weighed the merits of a $1,500,000 storm water diversion program.

Parking solutions

Solutions ranging from establishment of publicly-owned garages to installation of parking meters in business areas continued to be brought forward as city engineers sought to cope with increasing strangulation of traffic.

Considering parking spaces for operation by the city were: Honolulu, T. H., where Mayor John H. Wilson—a civil engineer—told officials that the city can build garages on or under existing city property more cheaply than it can buy and develop land for this purpose; and Philadelphia, Pa., where Thomas Buckley, director of the Department of Public Works, said that plans are under way for two sub-surface parking areas, to be financed by some $2,000,000 in city funds already appropriated.

Trenton, N. J., motorists saw that city's first parking meters—some 350 of them—go into operation; while Bloomington, Ind., which installed similar meters a year ago, reported it had collected $32,409 from the machines and realized a neat profit of $12,414.

Other solutions for traffic problems were under consideration at Coffeyville, Kan., where Mayor J. B. McCue called the city's traffic experts into consultation to pass on a program for improving some 74 miles of streets. and at Seattle, Wash., where officials approved a decision to make the proposed Alaskan Way viaduct a double-deck structure, with each deck 40 ft. wide and each carrying three lanes of traffic in one direction only. The total project will cost some $4,500,000 for the mile-long structure. At Kansas City, Mo., City Manager L. P. Cookingham asked authority to use revenues from an additional ½ cent gasoline tax to finance a $680,000 street paving plan.

SAVING ON PAVING

A new method of assessing paving costs by district instead of by front footage will be inaugurated by Toledo, Ohio, in projected surfacing of six streets in the Norwood Av. area. Two-block sections of five streets and a portion of a sixth street have been grouped as a single paving project to lower improvement costs to property owners.

Legality of the district has been upheld by city law officials. J. Slater Gibson, assistant city law director, explained that previously the method had been only for assessing drainage or storm sewer projects. M. J. Curtiss, city division engineer, estimated the total cost of the 6-street paving project would be $133,576, with property owners paying $116,741, or 98 per cent.

By one method of district assessment the charge against landowners would be approximately $287 per lot, while the city's old front-foot procedure would cost some lot owners as much as $960.

Chicago water

Since the middle of May, the South District of Chicago has been receiving 100 percent filtered water from its 320 mgd. filtration plant, according to W. W. DeBerard, city engineer. Plant operation is made possible by use of two temporary 5 mgd. wash-water pumps, while the city awaits the arrival of four permanent pumps.

Filters at the plant are delivering considerably in excess of their nominal capacity—during the first two weeks of 100 percent filtration for district consumption, 50 of the plant's 80 filters were in operation. By June 2, ten additional filters were put into use.

Other cities also reported progress in their water-service improvement programs. Warren, Ohio, city councilmen approved a contract by which the city will get its domestic supply from Mosquito Creek Reservoir, on a pay-as-used agreement with the federal government, that will cost the city $4.50 per million gallons for a 50-year period. Muncie, Ind., began work on construction of 21 blocks of 12-in. main, and New Castle, Ind., started a survey to determine means of alleviating its growing demand for water.

Smoke abatement

A new smoke abatement ordinance outlawing use of steam locomotives in Salt Lake City, Utah, will go into effect Aug. 1 despite mass meeting protests of Utah mine workers, officials have indicated.

Mine workers argue that the ordinance would throw out of work several hundred coal miners and many railroad men.

However, W. L. Butler, city smoke engineer, says that "the ordinance has been passed and I have no reason to believe it will be rescinded." Among other provisions, the law prohibits use of coal-burning locomotives within city limits.

J. A. Theobald, executive secretary of the Carbon County Associated Industries, has maintained that to shut out the use of steam locomotives in the city will deal a death blow to the coal mining industry of Carbon and Emery counties.

During the last three months the railroads have carried out a number of tests with locomotives equipped with steam air jets designed to reduce the

throwing off of smoke, demonstrating before Smoke Engineer Butler that such engines gave off practically no smoke.

In the meantime, the Union Pacific has eliminated the use of coal burning switch engines in local railroad yards and has announced that in the near future all Salt Lake City-Los Angeles trains would be Diesel operated. The Denver & Rio Grande Western also is changing over to Diesels.

Postpone E. Boston tunnel

A $34,000,000 project for the construction of a second East Boston traffic tunnel, with approaches to a proposed central traffic artery, has apparently been killed, unless Governor Bradford sends a special message to the legislature.

The House refused to reconsider the action by which it defeated the tunnel bill, ending further discussion of the measure for this session. The measure had been opposed by Mayor Curley and William J. McDonald, well-known real estate planner, who favor a bridge to East Boston.

Third step on Ross Dam

The Seattle, Wash., Municipal Board of Public Works has retained three consulting engineers to recommend the basis on which the city should contract for construction of the third step of City Light's Ross Dam.

The consultants are Maj. Gen. Thomas M. Robbins (retired) former acting head of the Army Engineers and division engineer at Portland, Ore., during the construction of Bonneville Dam; L. F. Harza, of Chicago, consultant on the Bonneville and Fort Peck Dam projects; and Carl D. Pollock, Seattle, chief engineer on Army and Navy projects in Alaska.

The second step of Ross Dam is nearing completion and the city council recently authorized the Board of Public Works to negotiate a new contract with the present contractor, General-Shea-Morrison, for the balance of the work.

Re-instate engineer

Circuit Judge Joseph J. Ward at St. Louis, Mo., ruled recently that Joseph J. Feuchter is entitled to reinstatement in the same job classification in the St. Louis Department of Streets and Sewers that he held when he was granted a leave of absence as city traffic engineer to enter military service on November 21, 1942.

Judge Ward directed Arthur C. Meyers, Director of Streets and Sewers, to reinstate Feuchter at a salary of $400 a month, and ordered the payment of $4,416 in back pay from June 28, 1946, when Feuchter unsuccessfully sought reinstatement, and in addition he awarded Feuchter $7,500 in damages. The position of traffic engineer at present is held by Thomas Watts, who qualified for the post in civil service examinations.

Judge Ward said that he based his ruling on Feuchter's status under the St. Louis civil service system and the Selective Service Act which guaranteed Feuchter, as a veteran, reinstatement to his old job or a similar one. The award of $7,500 damages was based on the damages to Feuchter's reputation by the "wrongful and unlawful acts of the defendants in failing to reinstate him."

Port Huron bypass

A 2-mile bypass from the approach of the Blue Water Bridge to Highway M-21, in Port Huron, Mich., has been ordered by the State Administrative Board.

The Board directed the State Highway Department to grant the bypass priority over all other uncommitted projects. Bids will be taken next September on the $1,000,000 project, with money to come from 1948 State-Federal funds. This is the first link in a bypass to go completely around Port Huron, estimated to cost approximately $3 to $4 million when completed. A new bridge across the Black River is included in the plans.

Bridge Commission Chairman Dale E. Moffett declared that the bypass was needed to offset ferry competition by directing traffic to the Blue Water Bridge, which has $1,807,000 in outstanding bonds. Moffett said that with increased traffic on the bridge, the bonds could be retired in seven years. The bypass would also relieve congested traffic conditions in the downtown area, he added.

Toledo housing board

The recently-created Toledo, Ohio, Housing Board has voted to organize a non-profit or limited dividend corporation to finance construction and sale or rental of new homes for persons of limited income. While details are not complete, a majority of the board members indicated the policy of the group would be to concentrate on construction of homes to fit incomes of between $40 and $45 weekly. The building and holding corporation will be financed by investment or contribution of private capital. The proposed dwellings would sell for from $4,000 to $5,000, and be built so that additions can be made.

Meanwhile, the group unanimously endorsed the Toledo Chamber of Commerce's campaign which encourages conversion of existing single residences into duplex homes.

Montreal work program

Final touches are being put to the program of local improvement works for the present year in Montreal, Que. A by-law authorizing the expediture of $2,000,000 for such works is to be submitted for approval soon. The city will borrow the money from the banks.

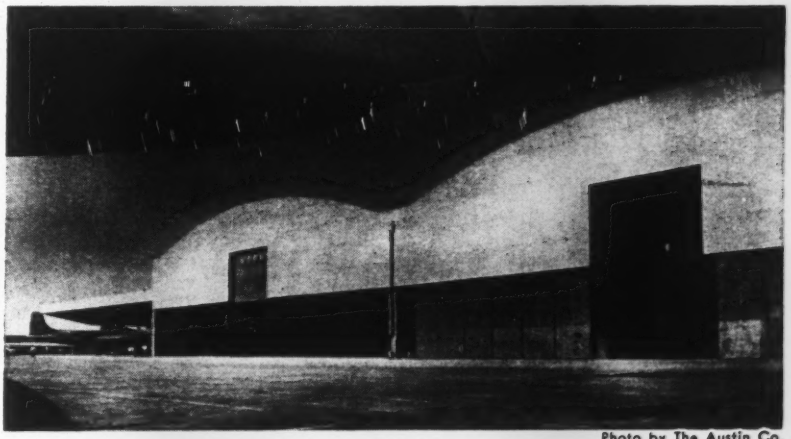


Photo by The Austin Co.

***Los Angeles Hangar**—Recently put into service, a general office, hangar and maintenance building for Western Air Lines occupies an area 300 x 600 ft. at the Los Angeles, Calif., Municipal Airport. The $2,000,000 structure is framed in steel, having 160-ft. truss spans in the repair hangars and a 60-ft. cantilevered overhang in the 278-ft. long nose hangar. Doors provide extra-high section to accommodate high tail assemblies of new transport planes.*

Congress to probe construction labor

House group will investigate restrictive practices—Many disputes reported settled

An investigation of labor conditions in the construction industry has been promised this summer by Rep. Fred A. Hartley, Jr. (R., N. J.), chairman of the House Labor Committee.

One of several investigations to be conducted by subcommittees, it will go into restrictive practices of building trades unions, "featherbedding," excessive union fees, jurisdictional disputes and other problems.

Rep. Ralph W. Gwinn (R., N. Y.) will head the subcommittee, Hartley said.

The announcement of impending federal action was one of many moves on the labor front reported to *Engineering News-Record* last week.

Restrictive labor laws featured the biennial session of the Texas legislation which has just closed. New laws require an open shop, prohibit disruption of utilities service, make unions subject to the anti-trust laws, prohibit the checking off of union dues without a worker's written consent, outlaw secondary strikes and boycotts, and make unions financially responsible for damages caused by strikes that are adjudged breaches of contract.

At Philadelphia, Pa., work on more than $60 million of building projects, employing 20,000 workers in a 5-county area, was at a standstill as the result of a stop-work order issued by the General Contractors Association, because of what it called work stoppages by various building trades unions.

End Indiana strike

A 7-week strike of 2,000 carpenters in Indianapolis, Ind., ended June 5 with the signing of a contract for $1.97½ an hour between the District Council of Carpenters and the Building Contractors Association of Indianapolis. The new contract represents a 30-cent-an-hour increase over carpenter's wage rates for last year.

New contracts calling for wage increases of 20 and 25 cents an hour will effect some 600 painters in Toledo, Ohio retroactive to May 1. The agreement calls for an additional 25 cents an hour for all three classifications of painters if they are required to work more than 30 feet above the ground or floor. Sandblasters in Toledo were also granted a wage increase of 25 cents an hour, establishing an hourly rate of $2.05, with a 25 cent additional if they are working 30 feet or more above ground.

The Master Builders Association and the Municipal Contractors Association of St. Louis, Mo., have entered into an agreement with the AFL International Union of Operating Engineers granting a wage increase of 20 cents per hour. Members of the union went on strike May 1 in support of their demands for a 35 cents and 30 cents an hour increase, according to the job classification.

The 34-day-old strike of Wilmington, Del., painters was ended June 3 when special negotiators, representing the Painters' Union, Local 100, and the Delaware Chapter, Master Painters Association, reached an agreement. Approximately 300 painters started back to work as a result of the settlement, which grants them their wage demand of $1.75 an hour—a 25-cent raise.

The first break in the month-old Mercer County, N. J. building trades strike occurred with announcement that two of the striking unions had agreed on wages with the Master Builders Exchange, Inc. at Trenton. More than $4,000,000 in construction work had been tied up and 1,500 building trades workers affected by the strike which began May 1. Negotiations have been resumed on demands of union carpenters and bricklayers for $2.50.

Would cut state projects for greater efficiency

A. N. Languis, Michigan director of building, recently urged that state construction projects be reduced by half to achieve greater efficiency. In discussing the 44 projects now under way in the state, on a fixed-fee and cost-plus contract form which he devised, Mr. Languis declared that labor efficiency is down, and the state has no way to insist on adequate labor production.

"Although the latest pay increase for carpenters stopped a lot of private building and eased the state's supply of labor, one contractor told me that he had laid off four workers because of insufficient production." Languis said. He added that bricklayers are now laying only 300 bricks a day as compared to a high of 1,000 in the past.

He cited the example of a duplicate building at the Caro Hospital. The first one cost $81,143 on contract bid in 1939, he said. In 1945, the lowest bid for the same building was $183,914. The state let a contract for $240,000 in 1946. Languis said the cost of the building had now gone up to $280,000.

Sign new building research contracts

Four additional contracts calling for comprehensive research to aid the construction industry were awarded recently by the Commerce Department's Office of Technical Service. These awards are part of a $1,500,000 program to aid small business and they supplement eight previous contracts (*ENR* March 28, vol. p. 472).

One of the contracts is with the University of Illinois to determine the materials and methods most suitable for constructing floors in low cost houses without basements.

Another project calls for the same university to carry out comprehensive research in connection with an "engineered house." This project will cost $95,000, of which the university will supply $36,000 and the Producers' Council $14,000. The plan is to use an engineering approach in designing small homes to demonstrate the substantial savings which can be effected in small home construction by standardizing on low-cost quality products, and to apply modular coordination.

The general designs to be studied were prepared by architects employed by the Producers' Council and the National Retail Lumber Dealers Association. A 1-bedroom plan with a floor area of 448 sq. ft. will be studied and also two plans each providing two bedrooms, one of the latter being a 2-story structure and one a single-story, L-shaped house.

The third contract calls for a $59,000 project by the Armour Research Foundation of Chicago aimed at standardization of lathing and plastering practices. The unions are putting up $11,000 of the cost. No producer is involved. This project is to determine the best mixtures and methods for the application of plaster and stucco. It is unique in that the trade unions concerned are the sponsors and aim to improve their skill and work standards to give the public better products.

A $38,000 contract has also been awarded to R. L. Davison Associates, New York City, for development of more satisfactory light-weight spandrels for multi-story buildings. The spandrels will be metal-faced fiber or foam concrete slabs, 2 to 3 in. thick, with excellent weather-proofing and insulating qualities. The spandrels will be tested in the usual manner for strength, permeability, and insulation, and then used in full scale by a New York architect in the construction of a multi-story apartment building to complete the practical testing.

Give new contracts for prefab houses

Five new guaranteed-market contracts, covering the production of a total of 2,210 prefabricated homes, were approved by the Office of the Housing Expediter last week, along with two contracts for production of new building materials for use in housing.

A total of 20 such contracts, covering the production of 90,000 prefabricated units, are now in force.

Approved last week were contracts with:

Pilgrim Homes, Fairfield, Conn.; Preco Corp., Bellingham, Wash., and Tri-State Homes, Inc., Salem, N. J., for production of a total of 1,350 one-story, two-bedroom homes with wood-frame panels surfaced with plywood. The design to be followed is one prepared by the Ivon R. Ford Lumber Co. of McDonough, N. Y.

Better Living, Inc., Atlanta, Ga., received a contract for manufacturing 500 one-story, two-bedroom homes, measuring 24 x 36 ft., with walls, partitions and floors consisting of factory-built wood frame panels.

Wadsworth Building Co., Inc., Overland Park, Kan., was guaranteed a market for 350 homes to be build with stressed-skin plywood panels for the walls, roof, floor and ceiling. Exterior siding is to be applied in the field, as will the hardwood flooring and asphalt shingles.

A total of 15 other contracts have been granted previously, including one calling for 19,400 homes to be delivered by the Homeola Corp., of Chicago, and others calling for 14,550 from the Lustron Corp. of Chicago and 10,000 from the William H. Harmon Co., of Philadelphia.

Of the 90,000 homes covered by the agreements, nearly 28,000 will be of a design featuring a wood frame and extensive use of plywood. Almost 25,000 will be of steel construction and over 23,000 of stressed-skin plywood construction. Aluminum will be used for only 3,180 houses.

New materials

The International Roll Forming Co., of New York City, received a contract from OHE for production of a new-type aluminum siding for use on residential construction. The contract calls for production of 6,000,000 linear feet of a siding that is applied to the side of the house under tension.

Production of a new-type all-in-one bathroom unit is planned by the Standard Fabrication Inc., of Chicago. A total of 25,000 units will be produced—each including a bathtub with shower, toilet, wash basin, linen storage compartment and medicine cabinet. Only four plumbing connections are needed in the field.

Three other contracts for materials have been awarded at OHE's suggestion. These call for the production of 2,400,000 sq. ft. of hardwood flooring of special design by laminated Wood Productions, Knoxville, Tenn., manufacture of 7,500,000 lb. of composite flooring by Kompolite Corp., Brooklyn, N. Y., and production of 900,000 sq. ft. of hollow concrete wall panels by A.T.F. Inc., of Elizabeth, N. J.

Defends program

In answer to critics who have sharply scored the guaranteed-market program, Housing Expediter Frank Creedon last week released a statement rejecting as "nonsense" charges that prefab homes are piling up in warehouses, and that the government is glutting the market with standardized small homes.

"To date approximately 3,000 houses have been built under these contracts," Mr. Creedon said. "That's less than one percent of new permanent housing completed in the production period. One percent of anything (does not) constitute a glut."

He said that less than 250 of the 3,000 houses produced are now in warehouses waiting distribution, and that to date not one house has been tendered to the government for purchase under the guarantee contract.

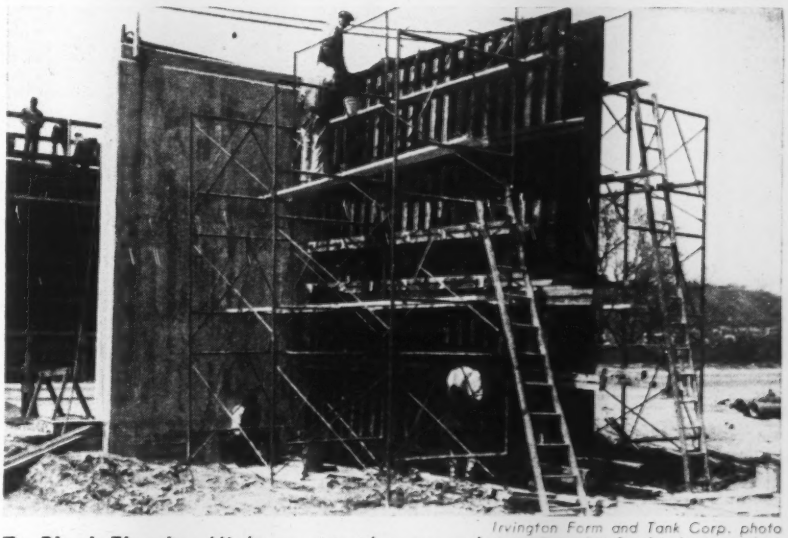
Washington observers last week saw little possibility that more guaranteed market contracts would be awarded, since both House and Senate had passed similar bills terminating that part of the Patman Act which authorizes this type of contract.

Lumber more plentiful, survey committee reports

There is no longer an acute shortage of lumber, according to the 64th quarterly report of the Lumber Survey Committee of the Department of Commerce. Buyers are now able to obtain general construction lumber without serious difficulty. Because of greater demand, there is still a scarcity of upper grade lumber, especially millwork and hardwood flooring. Lower grade lumber appears to be in adequate or surplus supply.

Increased production has been accompanied by an improvement in the inventories at all levels—at the mills, in the concentration yards, and in the wholesale and retail yards, the report said.

Estimated total production of lumber during the first quarter of 1947 was 7,195 million bd. ft., about 20 percent more than in the corresponding quarter of 1946.



Irvington Form and Tank Corp. photo

***To Block Floods**—Highway gate closures and an 18-to-25-ft. high concrete wall form part of flood protection work on the Ohio River near Newport, Ky. The walls and closure structures are being built with 3 x 9-ft. steel panels, assembled into 18-ft. high units and in some cases 27-ft. high units where required. The entire project involves 7,600 ft. of embankment and 1,000 ft. of concrete wall. Work is being done for the Louisville District, Corps of Engineers, by W. L. Johnson Const. Co., Columbus, Ohio, as contractors.*

MEN AND JOBS

Joseph A. Donnelly, an engineer with New York State Department of Public Works, division of bridges and grade crossings, retired June 1 after over 37 years service with the state in various capacities. He attended Lehigh University and completed his education at the University of London, England, from which he received the degrees of Master of Applied Science and Doctor of Philosophy. Mr. Donnelly expects to continue active in engineering work.

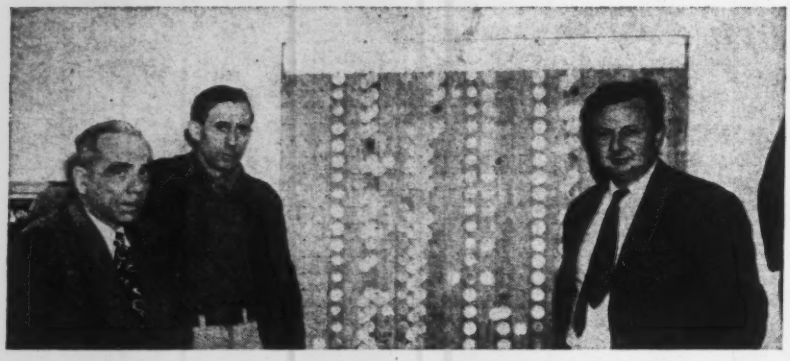
Peter Newell, after 25 years service with the state of New York, retired June 15 as assistant engineer, bridges and grade crossings, Department of Public Works. Since his graduation from the University of Pennsylvania where he studied civil engineering, Mr. Newell worked several years in the U. S. Patent Office and the U. S. Lighthouse Service as well as the 25 years in the service of New York State. He expects to spend most of his time on his farm near Westfield, N. Y.

Col. Louis H. Foote, until recently executive officer of Fort Lewis, Wash., has reported for duty as military assistant to Brig. Gen. Douglas L. Weart, Ohio River Division Engineer, Cincinnati. Colonel Foote, a veteran of three years service in military construction in the Aleutian Islands, entered the Army in 1927, soon after graduation from Washington State College, in engineering.

Dr. S. P. S. Edwards has been appointed temporary part-time superintendent of the Loma Linda, Calif., sanitation district. The county board of supervisors appointed Dr. Edwards to serve until the end of the current fiscal year as director of preliminary work in connection with installation of a sewerage disposal system there. A permanent maintenance engineer and inspector will be appointed this fall to supervise the operations of the district on a full-time basis.

H. H. Gerstein, chief filtration chemist at Chicago's South District plant, was one of the hosts to a group of engineers who inspected the plant recently during a meeting of the Illinois Section, AWWA, held at Chicago.

K. L. Parker (left) is chief engineer for the National Contractors, Inc., which holds a $13,000,000 general contract for Allatoona Dam in Georgia, and C. A. Jackson is resident engineer on the project for the Corps of Engineers.



P. L. Moccia, president of the Moccia Construction Co., sits at left while discussing erection of the Brownsville Houses in Brooklyn, N. Y., with J. R. Thorkildsen, superintendent of construction (center), and R. L. Mellick, chief engineer. Moccia is building the project in a joint venture with the Geo. L. Driscoll Co., also of New York City.

Chesley M. Pinkham, Santa Barbara, Calif., city employe since 1933 and acting superintendent for a few weeks, has been appointed city water superintendent succeeding **E. B. Brown.** Pinkham was graduated from Oakland Polytechnic College of Engineering. In 1933 he was placed in charge of the Mono Ranger Station, a city position supervised by the U. S. Forest Service. Later he was assigned to the engineering office of the city water department and made a silt survey of Gibraltar Dam. In 1935 he operated a pilot water treatment plant and later took charge of the filtration plant built in 1936.

Ludwig & Bacon have established a sanitary engineering consulting office at 608 South Fair Oaks Ave., Pasadena, Calif. Mr. Bacon was graduated from the University of California with a B.S. in civil engineering in 1940, and has since worked with various sewerage organizations including the East Bay Sewage Disposal Survey, the Los Angeles County Sanitation Districts, and, most recently, the Orange County Sewerage Survey. During the war he served with the U. S. Public Health Service and operated several anti-typhus projects in the southern states. Mr. Ludwig also was graduated from the University of California, receiving his B.S. in 1938 and M.S. in 1942. Prior to the war he was on engineering projects at Berkeley, Calif. In November, 1942, he entered the U. S. Public Health Service and was assigned to duty with the Office of Malaria Control at Atlanta, Ga., and next with UNRRA for operations in the Middle East and in Yugoslavia. Since July, 1946, he and Mr. Bacon have conducted the field operations associated with the sewerage survey for Orange County.

L. R. Plemmons, former city engineer of Hot Springs, Ark., has opened an engineering and construction office at 103 Greenway in that city.

W. E. Reynolds, Commissioner of the Public Buildings Administration of the Federal Works Agency, has been named chairman of the Continuing Committee, composed of representatives of the leading organizations interested in the national movement for fire safety. The committee approved the appointment of an executive committee of five members under the chairmanship of W. Walter Williams of

Seattle, Wash., who also serves as chairman of the committee on organized public support. The executive committee will be responsible for assisting in the organization of fire safety committees and conferences in each of the 48 states and in local communities.

Col. Moses E. Cox, formerly chief engineer of the Georgia State Highway Department, has been elected secretary-engineer of the Joint Bond Commission, charged with co-ordinating street and highway projects to be constructed with Atlanta and Fulton County bond money. Colonel Cox is a graduate of Clemson College and took postgraduate work at Cornell. He received his master's degree at Texas A & M. He is a veteran of both world wars.

Thomas A. Clark, Bureau of Reclamation employee since 1917, has been named construction engineer for the Riverton project in central Wyoming. As construction engineer, Mr. Clark will be in charge of preconstruction and construction work on the Riverton Reclamation Project and will work under the supervision of **D. L. Carmody,** project engineer.

William J. Leseman, Jr., is the new city engineer of Daytona Beach, Fla. He is a graduate of the University of Florida, did post graduate work at Annapolis and served for 5½ years with the Navy in construction work.

Appointment of **Marion W. Landon** of Lansing as acting highway planning engineer, has been announced by Highway Commissioner Charles M. Ziegler of Michigan. Mr. Landon assumes the duties of **Harry L. Brightman,** who retired after 34 years with the department.

Clarence Sterling, chief engineer and assistant director of the Institute of Inter-American Affairs has been honored by the Chilean government with the Al Merito award for his contributions to that country in the promotion of sanitation works. Mr. Sterling was stationed in Chile from 1943 to 1945 in charge of the Institute's program.

D. O. Robinson, a graduate in civil engineering from Queen's University, Kingston, Ont., has been appointed chief engineer, Canada Cement Co. Ltd., succeeding **J. M. Breen,** recently named assistant general manager.

Merle E. Brown, formerly with the Illinois Division of Waterways has started work with the C-S Engineering Co., Inc., Springfield, as civil engineer.

E. N. Torbert (left) regional planning engineer for the Bureau of Reclamation's northwest region at Boise, Idaho, points out items for future attention to Frank Clinton, who is the principal assistant regional planning engineer.

Richey Green (left) project engineer for the Florida State Road Department, and W. I. Nolen, project engineer on a nearby bridge, consult on progress of a 3.5-mi. road project now under construction near Zephyrhills, Fla.

Personnel changes recently announced by the Pennsylvania Highway Department are: Appointments: **Ralph C. Welliver,** of Bloomsburg, as project engineer in District No. 3, Williamsport. Resignations: **Claire S. Monroel Jr.,** Drexel Hill, project engineer in District No. 6, Ardmore.

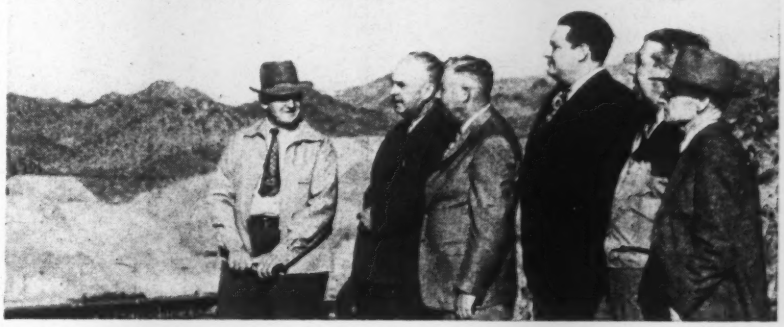
Harry Gingery, Fort Wayne Ind., who as an engineer designed the gates for the Gatun Locks in the Panama Canal 25 years ago, will leave Aug. 1, for Amuay, Venezuela where he has the job of constructing a power plant for a refinery. The project will take two and a half years and the work of some 800 foremen and Venezuelan laborers. Gingery spent six years as a Navy commander with the Bureau of Docks and Yards building air bases in the West Indies before and during the early years of the war.

The city council of San Bernardino, Calif., has changed the title of **John G. Center** from street superintendent and ex-officio city engineer to superintendent of streets.

William Hudson Carper, city manager of Harrisonburg, Va., has been named city manager of Burlington, N. C., succeeding **Roy L. Williamson,** who resigned recently. Carper received his civil engineering degree at Virginia Polytechnic Institute and has served as a municipal engineer at Salem, Va., as city engineer at Fredericksburg, Va., as city manager of Culpepper, Va., as city manager of Clifton Forge Va., and as an engineer with the Virginia State Planning Board.

Roy S. Braden, city manager of High Point, N. C., for last four years, has resigned to become the first city manager of Raleigh, N. C.

W. B. Ricks, has left as traffic engineer, District 7, Effingham, Illinois Division of Highways, to go with the state's department of aeronautics as construction engineer.



H. F. Bahmeier, construction engineer for the Bureau of Reclamation on Davis Dam, Ariz., does the talking during a recent inspection trip. Others, left to right, are: Congressman John Murdock, Arizona; Senator Ernest McFarland, Arizona; Julius A. Krug, Secretary of the Interior; M. W. Straus, Commissioner of Reclamation, and Walker R. Young, chief engineer of the bureau.

ENGINEERING SCHOOL NEWS

New curriculum for juniors at North Carolina—Floor research at Illinois—Solar heating studied at Purdue—Faculty changes

The North Carolina State College School of Engineering at Raleigh, N. C., has adopted 2-year emergency measures in order to provide instruction for a record-breaking junior class expected next academic year.

Dean J. H. Lampe said the school has established a new curriculum in general engineering in which "overflow" students may enroll. The school will be confronted with a junior class of 800 as compared with a prewar peak enrollment of 350 to 399 students in the junior level. By operating mornings, afternoons, and nights and utilizing all available space and instructors, the maximum number that can be admitted to the regular curricula is 500. The new curriculum in general engineering has been devised to enable the 300 additional students to continue their training. It differs from the others in that it does not require laboratory work.

Under the new plan, students will be admitted to the regular curricula on their scholastic record until the quotas of the various departments are reached.

Emphasizing that this move is "a measure of expediency," Dean Lampe said it has been adopted for a 2-year period only. In that time the college's building program as recommended by the 1947 legislature will be complete and will provide for the increased student load.

Research to determine the materials and methods most suitable for constructing floors in low cost houses without basements will be carried out at the University of Illinois under a contract with the industrial research and development division of the Office of Technical Services, Department of Commerce. Research funds of $20,000 have been allotted to the project, of which $1,000 will be used for the publication and dissemination of a report. It is desired to find out which materials or combinations of materials in slab-on-the-ground type of floors will most effectively provide warm, dry interiors and minimize moisture condensation because of temperature changes.

Three retiring members of the civil engineering department of the University of Minnesota were honored there recently. They were Alvin S. Cutler, professor of railway engineering, who went to the university in 1907; Otto S. Zelner, associate professor of civil engineering emeritus, who went to the university in 1910 and retired in June, 1946; and Leonard F. Boon, assistant professor of civil engineering whose service at the university dates back to 1920 and who will retire in June, 1948. All three have taught in the surveying and railroad divisions of the civil engineering department and have been associated with the summer surveying camp.

A Purdue University scientist has announced that research over a 2-year period has proved that the sun's rays can be captured to partially heat "solar" houses. He is Prof. F. W. Hutchinson, who carried on his study in two test houses—one solar and one orthodox. The experiments were financed by the Libbey-Owens-Ford Glass Co.

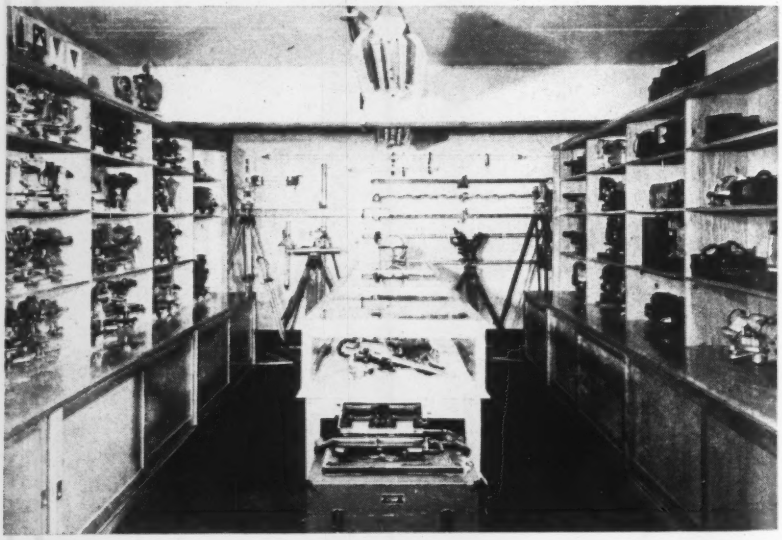
The test houses, identical in size and design except for the larger windows on the south wall of the solar structure, are 1-story cottages glazed with a double-paned insulating glass. The experiments, Dr. Hutchinson said, showed a "substantial reduction in required degree-hours of heating for a solar over an orthodox house," but complete data are not yet available on comparative heating costs. He pointed out that a structure in New York City having 570 sq.ft. of insulated exterior wall and 100 sq.ft. of double glass in the south wall for comfort theoretically would not require any seasonal heat input other than from the sun.

With a greater proportion of glass, the house would be too warm: with a lesser proportion, some heating would be necessary.

"Contrary to popular opinion," he said, "the quantity of solar energy received through an unshaded south-exposure window on an average sunny day in winter is substantially more than that received through the same window on an average sunny day in summer."

Martin R. Huberty, professor of irrigation engineering at the University of California, has taken a several months' leave to study land and water resources of the southwestern United States and Mexico. He will visit irrigation and reclamation projects in the border states and Mexico, paying particular attention to natural resources as they relate to the international water problem. While in Mexico he will make use of the facilities of the Comision Nacional de Irrigation.

George A. Wallace, a member of the teaching staff of McGill University, Montreal, since 1916 when he was named Douglas tutor in engineering, has been made a full professor of engineering.



***Museum of Surveying Equipment**—An instrument museum displaying one of the largest collections in the U. S. of modern foreign-made surveying equipment has been established at Fort Belvoir, Va., by the Ground Control Branch of the Engineer Board. Swiss, French, German, Italian, British, and Japanese instruments are on exhibit. Considerable American experimental equipment is also displayed.*

Canada publishes code for small municipalities

A building code consisting principally of minimum requirements for safety and health in 1- and 2-family dwellings has just been issued by the National Research Council of Canada. This code is an abridged edition of the National Building Code published in 1942, and it is hoped that it will be found acceptable not only to the small municipality where nearly all construction is of 1- and 2-family dwellings but also to larger towns or small cities in which there is other construction. The code is complete in itself, since it includes references to the National Building Code for regulations covering buildings used for other purposes than those defined in the abridged edition.

Copies of "A Building Code for Smaller Municipalities" (N.R.C. No. 1536) are obtainable from the National Research Council, Ottawa, Ont.

Russian engineer honored by New York group

Nikolai D. Bassov of the U.S.S.R., only engineer on the board of design for the United Nations headquarters at New York, was the guest of honor at a luncheon meeting on June 12 sponsored by the Metropolitan Section of the American Society of Civil Engineers.

J. P. H. Perry, vice-president of the Turner Construction Co., who presided at the meeting, said that Mr. Bassov was returning to Russia in a few days after many months of work in this country, during which period he had earned for himself the high esteem of the architects and engineers with whom he had been associated on the United Nations project. Like views were expressed by Max Abramovitz, of the architectural firm of Harrison & Abramovitz, deputy director of the board of design.

Early start is expected on first Houston tunnel

The Houston, Tex., Port Commission has adopted a formal resolution making available to Harris County the navigation district's $1,200,000 contribution toward the cost of constructing two planned vehicular tunnels under the Houston ship channel. (*ENR* June 5, vol. p. 909).

By its action the commission removed one of the few remaining obstacles to an early start of work on the Pasadena tunnel, which will be built entirely with county and navigation district funds.

Four commissioners have signed a $395,000 contract with the Mobile firm of Palmer & Baker who will be consulting engineers for the Pasadena tunnel, after the state highway commission approved a definite agreement on construction of the Spillman Island tunnel, retaining its own engineers for the latter project.

Golden Gate Bridge has its 10th anniversary

The San Francisco Golden Gate Bridge celebrated its 10th birthday May 26 and one of the nearly 1,000 party guests was the 50,000,000th automobile passenger to cross the span.

Over the 10-year period the bridge district has retired $1,000,000 on its $35,000,000 bonded indebtedness and paid a total of $14,813,158 in interest. Bridge officials predict the total debt will be paid long before the original completion date set in 1971. Revenue to date totals $25,000,000, according to fiscal reports.

The bridge has been crossed by more than 50,000,000 vehicles. Some 37,000,000 bus passengers, 12,000,000 extra passengers and 625,000 pedestrians have used the span. Traffic has increased from about 9,000 vehicles per day to an average of 22,000. Assessed valuation has jumped from $950,000,000 to $1,500,000,000.

Armed forces seek aid in technical problems

Army, Navy and Coast Guard headquarters recently made public a list of some 25 technical problems on which they would like the suggestions of American inventors and scientific men.

Of the list, three are of particular interest to civil engineers. One seeks a means of solidifying soils to support emergency military operations; a second is to develop and investigate plastics that may be used in the fabrication of military bridge structural members, airplane landing mats, collapsible water tanks and transparent window-glass substitutes that will not become brittle after repeated folding; and the third seeks development of lightweight, high-strength, non-corrosive structural metals with low inflammability characteristics.

Information not now in the possession of the armed forces, but known to private individuals or laboratories that would be useful in solving these problems, should be forwarded to the National Inventors' Council, Department of Commerce, Washington, 25, D. C.

Court allows road bureau to appropriate depot

Right of the Ohio State Highway Department to appropriate the Pennsylvania Railroad depot in Youngstown to make way for a new $1,500,000 Spring Common bridge has been upheld in Franklin County Common Pleas Court in Columbus. The railroad asked to enjoin the state, charging the state could not take the station by its right of "eminent domain", because the property already was dedicated to public use and that the highway department as such had no superior rights.

In sustaining the state's demurrer, Judge Myron B. Gessaman found "the power of the state of Ohio is superior to that of the railroad company." The highway department earlier offered $94,000 for the old station, which is in the direct path of the proposed bridge.

Water improvements completed on Oahu, T. H.

Completion of a new $1,063,000 water project at Kahaluu has ended water rationing for residents on the windward side of Oahu, T. H.

Hawaiin Dredging Co. in 14 months has completed a $500,000 tunnel which runs 460 ft. into the Koolau Mountains and has a bore 6x7 ft. In addition, the company has laid 5 mi. of 16-in. pipe at a cost of $288,000 to tie in the new water source with the existing system.

The Honolulu suburban water system paid $275,000 for the pipe. FWA contributed $195,000 and the Honolulu city-county government the rest.

About 2.5 mgd. is being brought in from Kahaluu spring by the project, increasing the available water supply for the area it serves by about 50 percent. It is the biggest water development undertaken by the Honolulu suburban water system since before the war.

Oklahoma road bureau is re-organized

Stoner K. McLelland of Oklahoma City has been named state highway engineer of Oklahoma. He will succeed H. E. Bailey, named director of highways.

This is a reorganization in accordance with the law passed by the last legislature setting up an 8-member body and a director.

Mr. McLelland returned to Highway Department work in January of this year, after acting as engineer coordinator of a $15,000,000 bond issue construction program for Oklahoma City.

OBITUARY

Solomon M. Swaab, 76, who was responsible for the design of much of the subway and water system of Philadelphia, Pa., died there June 13. A graduate of the University of Pennsylvania, Mr. Swaab joined the city's Department of Public Works in 1890, and was in charge of design work on city sewers and water mains, and much highway work. In 1902, as engineer for the Philadelphia Rapid Transit Co., he was in charge of design for the Market Street subway and elevated structures, and for other transit lines in the city. Acting as a special consultant to the mayor in later years, he was chairman of a committee that re-drafted the city's building code, and worked closely with city officials on the construction of the Lardiner Point, Torresdale and Queen Lane pumping and filter stations.

Leon H. Nishkian, 65, consulting structural engineer, died in San Francisco, Calif., recently. Born in Istanbul, Turkey, he attended the University of California, obtaining his civil engineering degree in 1906. Much of the latter part of Mr. Nishkian's life was spent studying the possibilities of a second San Francisco Bay crossing, climaxed by the presentation to a joint Army-Navy investigating board of a causeway plan which was a modified version of the widely-discussed Reber Plan.

During the war Mr. Nishkian was associated with Rear Adm. Frederick R. Harris in the design of various naval waterfront installations in the San Francisco Bay area. He also joined with W. P. Day in work for the Army in Utah and Honolulu. In 1941 he was made consulting engineer to the Golden Gate Bridge and Highway District, a position he held until his death.

Benjamin E. Newlun, 50, civil engineer for the New York Central Railroad, died in Worthington, Ohio.

Brig. Gen. Henry T. Hughes, 77, Chief Engineer of the Canadian Battlefields Commision, and formerly construction engineer of the Canadian Pacific Railway died at Victoria, B. C., recently.

Charles M. Crawford, 60, former civil engineer for the Reconstruction Finance Corporation at Louisville, Ky., died at Greenville, S. C., June 6.

Frank A. Moore, 68, civil engineer, died in Toronto, Ont., May 29. Graduated as a civil engineer from the University of Toronto Mr. Moore was at one time engaged in construction work with the Canadian Northern Railway. The latter part of his career was spent with the Turnbull Elevator Co. Ltd. as personnel manager.

J. P. McGlaughlin, 66, a retired construction engineer, who traveled extensively in South America where he built many factories for Standard Brands, Inc., died June 1 in Silver Spring, Md.

Herbert S. Murphy, 64, Philadelphia transit engineer, died May 22. He was associated with the Philadelphia Transportation Co. He was graduated in 1904 from the University of Pennsylvania.

Flood control projects started in Chicago area

Two flood control jobs in the Chicago District, Corps of Engineers, are ready to move ahead. Col. W. P. Trower, district engineer, has issued notice to proceed with the building of a set-back levee in the Coal Creek drainage and levee project opposite Beardstown, Ill. Late in the summer the district office expects to advertise for bids on an earth dam roughly estimated at $1,500,000 across Fondulac Creek on the Farm Creek flood control project.

A contract valued at $890,000 for the levees was awarded in May to the Wallick and Osborne Construction & Equipment Co. Inc., St. Louis. Completion time is 630 days, with extensions for bad weather and other conditions beyond the control of the contractor. The levee will reduce flood hazards at Beardstown and will protect farm land.

Fondulac Dam will afford protection to industrial plants and residential areas of East Peoria, Ill., now subject to damage from flash floods in Farm Creek. The dam will be a rolled earth structure with a maximum height of 67 ft. and a crest length of 1,000 ft., plus 400 ft. of dike. It will have a concrete chute spillway 100 ft. wide. Capacity of the reservoir will be 2,280 acre-ft.

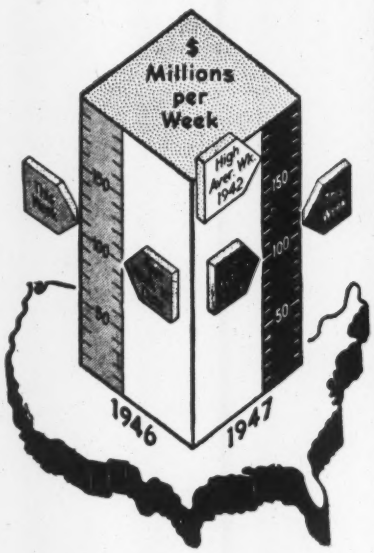
MAJOR MEETINGS

American Water Works Association, 67th annual conference, jointly with Federation of Sewage Works Association, 20th annual meeting, Civic Auditorium, San Francisco, Calif., July 21-25.

Federation of Sewage Works Associations, jointly with American Water Works Association. See above.

American Congress on Surveying and Mapping, 7th annual meeting, Statler Hotel, Washington, D. C., August 14-15.

CONSTRUCTION ACTIVITY



As Reported this week to... *Engineering News-Record*

CONTRACT VOLUME

Continental U. S. Only (Thousands of Dollars)

	Week of June 19 1947	Cumulative 1947 (25 wks)	Cumulative 1946 (25 wks)
Federal	$6,161	$291,046	$298,158
State & Mun.	46,459	766,004	610,692
Total Public.	$52,620	$1,057,050	$908,851
Total Private.	41,868	1,473,345	1,594,729
U. S. Total	**$94,488**	**$2,530,395**	**$2,503,580**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Type of Work	Dollar Volume (Thousands) This Week	Cumulative 1947 (25 wks)	Cumulative 1946 (25 wks)
Waterworks ..	$1,338	$53,356	$45,071
Sewerage	3,940	57,030	44,220
Bridges	2,661	77,722	58,987
Highways	25,568	362,908	344,398
Earthwork, Waterways	3,275	134,492	185,857
Buildings, Public	13,279	244,164	155,970
Industrial ..	11,621	366,788	511,558
Commercial.	25,178	883,970	975,543
Unclassified ..	7,628	349,965	181,976

NOTE: Minimum size projects included are: Waterworks and waterway projects, $22,500; other public works, $40,000; industrial buildings, $55,000; other buildings, $205,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (25 wks)	Cumulative 1946 (25 wks)
NON-FEDERAL $845,385		$495,097
Corporate Securities	336,293	193,070
State and Municipal	509,092	302,027
FEDERAL		158,320
Total Capital $845,385		**$653,417**

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost..	June '47	403.29	193.86
Building Cost	June '47	303.14	163.87
Volume	May '47	224.	98.

PUBLIC